

An
Inaugural Essay
on
Bullocky
for
The Degree of M.D.
in
The University of Pennsylvania
by
Charles Ellis Senior
of
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By the term, bubonelle, or inguinal hernia; surgeons understand the protrusion of some of the viscera of the abdomen, into a sac, formed by an elongation of the peritoneum, passing out of one of the rings of the abdomen.

Before describing the causes, and effects of the above disease, I conceive it requisite, to describe the anatomy of the parts, concerned in this species of hernias.

After the integuments of the abdomen are removed, we observe a thin, but compact sheet of cellular substance, covering the abdominal muscles, which, modern anatomists have named the superficial fascia: Beneath this fascia, may be seen an artery, termed, arteria ad extremum abdominis, passing over Peristalsis ligament, and running towards the umbilicus; it is a branch of the femoral; and, from its intimate relation with the operator for the above disease, it should be particularly noticed, in the dissection of the parts. Under this fascia, lies the tendon of the

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external oblique muscle, the doubling of the lower margin of which, constitutes Poupart's ligament; it takes origin from the anterior, superior, spine of the ilium, and, is inserted into the body and crest of the pubis: the last insertion is called femor - femoris ligament; as it approaches this bone, it splits into two columns, leaving a triangular space between, called the external abdominal ring, out of which, emerges the spermatic cord. When the tendon of the above named muscle is removed, we bring into view the internal oblique muscle, which arises from the iliac, or outer half of Poupart's ligament, and, is inserted into the pubis, just behind the external abdominal ring. From the edge of this muscle, in fact, arises the cremaster muscle, which covers the spermatic cord, and descends with it into the scrotum. After removing the internal oblique, we bring into view the transversalis muscle, which arises, also, from the iliac half of Poupart's ligament, and is also inserted into the pubis, in company with internal

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oblique; it does not cover so much of the cord, as the last named muscle. The above named muscles cover the abdomen, and assist in supporting the viscera; from the manner, in which, the two last are formed, this support would not be sufficient, were it not for an additional structure of condensed cellular substance, interposed between the muscles and periosteum, which is the fascia transversalis. In this fascia, about midway between the anterior superior spine of the ilium, and symphysis pubis, an opening is made, by the passage of the cord, called, the internal abdominal ring; at the inner side of this ring, we find the epigastric artery; - which, therefore, runs between the two abdominal openings. From the above account of the anatomy of the parts, concerned in this disease, it appears, that there ^{are} two rings on each side of the abdomen, the external, formed by the splitting of the tendon of the external oblique, and the internal, by the above mentioned opening in the fascia transversalis. - - - - -

To make this structure more intelligible, it will be necessary to recollect, that these rings are distant from each other, in an adult person, about one inch and a half; the space between is called the abdominal canal, for the passage of the spermatic cords. This cord enters the internal ring, keeps obliquely downwards, and inwards, under the edges of the internal oblique, and transversalis, until it reaches the external ring, when its course is more perpendicular, passing into the scrotum.

If we reflect for a moment, the reason is very obvious, why, the cord does not perforate the internal oblique, and transversalis muscles; as, they are deficient or wanting, from the inner half of Scarpa's ligament, to their insertion. If a dissection be made, of the cavities and contents of an inguinal hernia, the parts will be presented in the following order; the integuments, the superficial fascia; the cremaster muscle; and, the hernial sac, which contains the protruded parts. Inguinal hernia is more common, than either of the other species; occurring, mostly, in the male sex:

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and, also more frequently, on the right side; it is divided
into: reducible, irreducible, and strangulated or incar-
cerated. The reducible is that state, in which, the
protruded parts are easily returned by the patient.
By the irreducible, we understand, a permanent
protrusion, resulting either from the bulk of the parts,
or, from adhesions between the sac and its contents.
By Strangulated, we mean that state, in which, the
parts are confined by a stricture, producing the most
alarming symptoms until that stricture be removed.
Therein also various different affections, according
to the contents of the sac. If it contain intestine, it is
called an enterocele; if omentum, epiplocele; and, if
both unite to form the tumor, it is styled an entero-
-epiplocele. Every hernia is furnished with a sac, which
is merely an elongation of the peritoneum, pushed
before the protruded viscera. Surgeons have divided
it, into the mouth, neck, and fundus. The last
portion, communicating directly with the abdomen,
is its mouth; the part, immediately surrounding
the tenacity of the ring, is called the neck; and,



the lower extremity, its purulency. The causes of hernia are either predisposing, or exciting; the former are a preternatural laxity of the parts, and a hereditary constitution. The exciting causes are more various, as running, jumping, lifting, or carrying heavy weights, &c, by vomiting, or, long constipation, or, by blows on the abdomen, also, by straining at stool, particularly if there would be much effort to produce a rupture, if the abdomen should happen to be distended, but the time the injury was received.

Symptoms:
The reducible hernia may be known, by the tumour being smaller in the recumbent, than in the erect posture; by the patient's being able to return the protruded parts into the abdomen, upon reclining himself on his back; and by the swelling increasing after eating, or when he is flatulent.

The contents of a reducible hernia may be ascertained by the following circumstances; if the surface of the tumour be uniform, and elastic to the touch, if tense and enlarges, when the patient coughs, and the contents snap into the abdomen at once,



with a peculiar noise, it is then known to be intestine,
and, is called an Interocele. If the tumour, or
the contrary, imparts to the fingers a doughy sensation,
if fleshy, and uneven on the surface, and, the
parts rise up gradually, and with difficulty, the
case may be considered, an Epiplocele. If ^{so} bent the
contents rise up with a gurgling noise, leaving
behind something, which is, with difficulty, returned;
then, we style it, an Intero-Epiplocele.

Inguinal hernia may be mistaken for Hydrocele,
or Sperocele; it may be distinguished from the former,
by the tumour always commencing at the lower
part of the scrotum, and, gradually, ascending
towards the abdominal ring; while hernia,
always, commences above, and ascends into the
scrotum. But, with the latter, a Sperocele,
our diagnostics are not so clearly pointed out;
as the tumour, in either, commences above at the
ring, and also appears in the rect, but utans in the
recumbant position, the same as reducible hernia;
but only diagnostic, is, to place the patient in the



horizontal posture, and empty the scrotum by well
directed pressure, then place a finger firmly on the
upper part of the ring, and request the patient to rise;
if it be hernia, the tumour cannot reappear; but if
circumscribed, the swelling returns with increased size;
owing to the return of blood into the abdomen through
the veins, being prevented by the pressure. An irreducible
hernia may be ascertained, by the patient's not being
able to return the protruding parts, either, from the
adhesions between the sac and its contents, or from
an enlargement of the protruded parts. The symptoms
of strangulated hernia are, generally, very strongly marked;
such as, sickness of the stomach, pain, in the abdomen,
retching and vomiting, hiccups, and a severe pain
in the tumour. In the more violent cases, bilious
and serousinous matters are thrown up, with a
quick pulse and corroded fauces, tongue various,
sometimes purped, at others, clean and natural.
If the stricture is not speedily removed, the urine
is exchanged for a convulsive singultus, and the
pulse becomes small, thready and intermitting;



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The skin is cold and moist; the eyes have now a languid and glazy appearance; and the whole aspect of the countenance is changed; the pains in the lumbar substance; the skin loses its natural colour, and becomes livid; and the patient flatters himself, that a thin tumorous cure has taken place; but, this pleasure is of short duration, for the singultus and cold sweat increasing with violence, death soon closes the tragedy. We are very frequently deceived by patients, particularly females, denying the existence of any tumour, and are led to believe the disease to be colic; such is the similitude between this affection and inguinal hernia; that, when we are called to a patient, labouring under severe pains in the abdomen, attended by sickness and remitting, which do not yield to a physician's remedies, we ought always to suspect hernia, and request an examination, and, not unfrequently, a concealed tumour will be detected. Patients, very frequently, have a discharge from their bowels soon after the party become stuporous, which may lead us to believe, the intestine has slipped into the



abdomen; but this is nothing more than the discharge of the feces contained below the protruding part.

Treatment

The only treatment to be relied on in a reducible hernia, is a truss, made either by Mr. Wright of Liverpool, or Mr. Hull of New York, to be worn day and night.

The treatment in irreducible hernias is, merely to support the protruding part from hanging down, and becoming more inconvenient; which may be accomplished in an appropriate bag truss. In the treatment for skin evulsed hernias, the primary object is to replace the protruding part as soon as possible; when called to a patient labouring under this disease, we must be guided by the present symptoms and appearances.

If it be a strong adult patient, I would recommend resection, immediately and espiously; then, make use of the Tercis, which is nothing but a speciate rebus with the fingers, and remeet thus:

After placing the patient in the recumbent posture, with his head, shoulders and knees elevated, and his thighs flexed on the pelvis, so as to relax the abdominal



muscles and bones; then embrace the tumour with one hand, while, with the thumb and fingers of the other place it just above the ring, move them from side to side, rubbing gently, in a manner, the fingers, and, at the same time, make gentle but steady pressure, with the first mentioned hand; then efforts must be made in the course of the canæ, which is upwards and outwards; all this not succeeding in the course of twenty minutes, I would next put the patient in the warm bath, and after he had remained some length of times in that situation, then resume the lysis while the patient is still in the bath; This also failing, the next step is, to apply cold application to the tumour, the best of which, is ^Oarondeus ice, placed in a vessel, and put on the tumour, taking care not to freeze the parts; this not being convenient, we might substitute the powdery muriate of ammonia, and nitre, and a dr. of water; this application is to be made, with cloths dipping in this solution, and frequently applying to the tumour, then resume the above mentioned lysis; This not succeeding, I would recommend the operation,



believing it to be less dangerous than the tobacco enema,
it early resorted to.

Before describing this operation, perhaps it may not
be amiss to give the ancient methods: We are told
by Arnaud, and Heister, that, in the time of Belsus,
the surgeons never informed the operation whether
cutting out the testicle, or injuring its junctions.

Some surgeons, after cutting with one stroke of the knife
down to the sac, would pass a ligature around it,
and cut the sac off, together with the testicles.

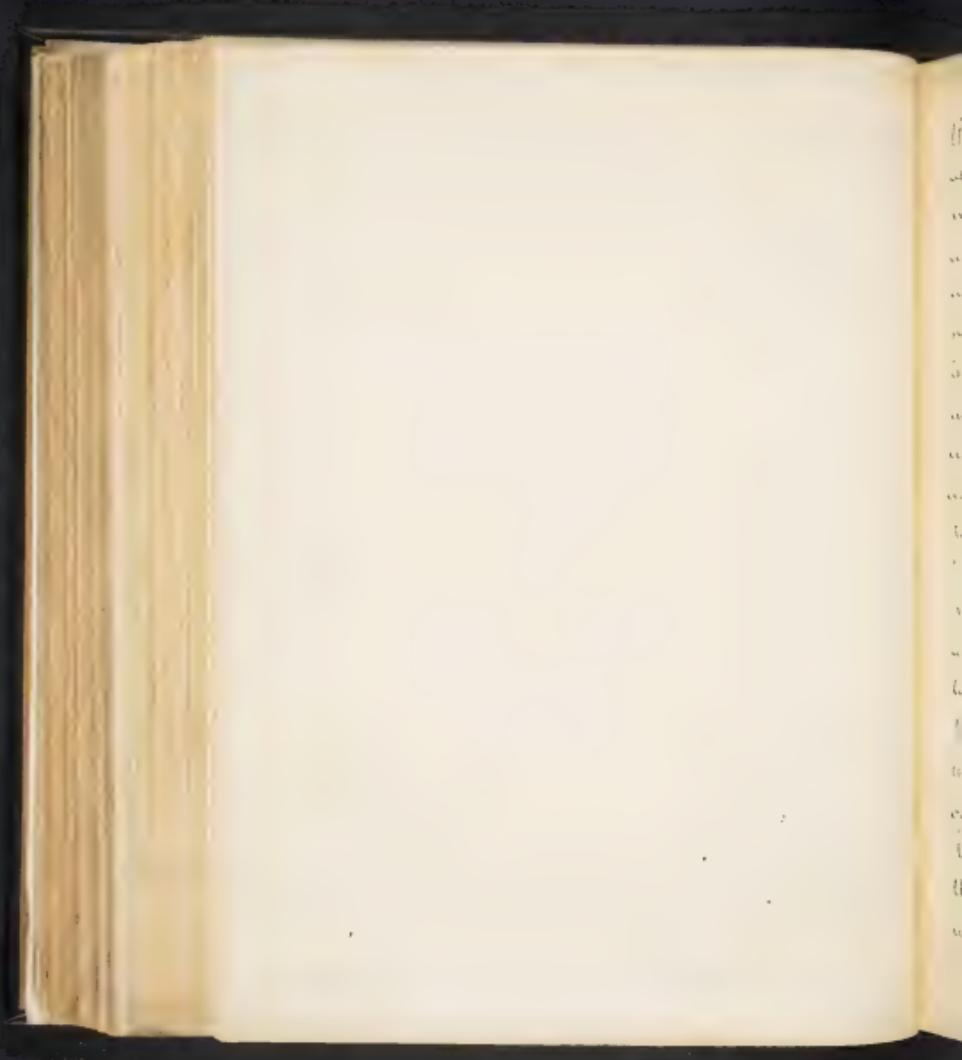
Others, after cutting to the sac, would apply the
active cautery to the part where the intestine came
out, to make the scrotum and pubis closely together;
& to prevent a return of the ruptura. Others would pass
a large needle, armed with a strong ligature through
the scrotum, and then, placing it upon the upper
and inferior end a large piece of wool, draw
the ligature tight around the whole, every day gentle
the part sloughed off. Others, after cutting into
the sac, would fill it with the whites of eggs, and
continue so to do, every day, until the wound healed:



Yet nature, notwithstanding all these cruel and
foul operations, breed sometimes, cancerous.
But surgery of the present age is founded on
anatomical knowledge, and the operation is
performed by a most scientific skill; and often
cures success.

The modern operation is per-
formed in the following manner:

After placing the patient on a narrow table
of a convenient height, with his legs hanging
over its edge, and each foot placed in a chair,
the surgeon, takes the most convenient station,
and grasps the tumor with one hand, then
with the scalpel in the other, makes an incision
through the integument, commencing at the
upper part of the tumor, and extending it
circumferentially to its base: this exposes the superciliary
fascia, which is to be divided in a careful manner
by successive strokes of the knife. In cutting this
fascia, the small cuticular artery, formerly described,
is generally cut, which may require a ligature as



the hemorrhage should always be commended as we proceed. This brings us to the rectus muscle, the fibers of which are to be carefully cut until we arrive at the sac; by pinching them up with our fingers, or forceps, and drawing its fibers with the snare. The next step of the operation is to be performed, by separating the sac from the intestines, and making a horizontal incision at which a quantity of fluid generally escapes, either intestine, or omentum, or both appear at the wound, this opening is to be enlarged, and the protruded parts examined, and if found in proper condition, to be returned into the abdomen; a finger of either hand may be introduced between the sac and protruded part, to search for the stichure, which will either be found at the external ring, the internal ring, or the mouth of the sac. After ascertaining the point of stichure, unloosing, by a sufficient tie, one in the fingers, the protruded part may be turned without disturbing the stichure.



But, if this fail, the Surgeon introduces a probe pointedly biting on his finger, with the flat-side between the sac and its contents, until it reaches the stricture; he then turns up the cutting edge of the instrument, and cuts the stricture directly upwards, to avoid the Epigastric artery; sometimes, a very small incision will be sufficient, to liberate the parts. As soon as this is accomplished, gentle and appropriate pressure will restore the protruded parts; unless the intestine be confined by a membranous band; in that case, the gut should be drawn down, and the bands carefully divided. The integument are to be brought together, and retained by adhesive plaster, and a recumbent posture to be strictly enjoined during the cure; after which, a truss is to be worn constantly, to prevent a return of the parts. Some Surgeons recommend the truss to be put on during the healing of the wound, to glue the sides of the sac together, and prevent a return of the hernia; afterwards. If the patient remains constipated, some

about an intermediate position between the two extremes
of the spectrum, and the same result is obtained when
the light passes through a medium which has a
constant refractive index, and the same result is obtained
when the light passes through a medium which has a
constant absorption coefficient. The absorption coefficient
is defined as the ratio of the intensity of the light after
it has passed through a distance d to the intensity of the
light before it has passed through a distance d . The
absorption coefficient is given by the formula
$$A = \frac{I}{I_0} e^{-\alpha d}$$

where I is the intensity of the light after it has passed
through a distance d , I_0 is the intensity of the light before it has
passed through a distance d , and α is the absorption coefficient.
The absorption coefficient is a constant for a given
medium, and it is independent of the wavelength of the
light. The absorption coefficient is also independent of
the intensity of the light, and it is independent of the
angle of incidence of the light.

gentle laxative may be given, and its operation
assisted by a milky glyster.

We should not delay the operation too long; as a
general rule, twelve hours are sufficient to try all
the preceding remedies; also, the smaller the
hernia, the more violent the synstaxis; and the
greater the danger of delay; neither should we
be deceived by a discharge of feces or flatus, and
flatter cruribus, at the patient, that the stricture
has given way spontaneously, as this is the
contents of the intestine below the stricture
haut, which is discharged by the straining of
the stricture.

